

Faculty perspectives on research and extension in higher education: a mixed-methods study

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ABSTRACT

This research employed an exploratory sequential mixed-methods design to comprehensively investigate the research and extension (R&E) functions within a higher education institutions (HEIs). The study unfolded in 2 distinct phases, commencing with a qualitative exploration of HEIs faculty perspectives from one of the HEIs in Zamboanga del Sur, Philippines. This qualitative phase, facilitated by expert-validated in-depth interviews (IDI), uncovered insights into faculty experiences, challenges, and potential interventions related to R&E functions. The qualitative data were collected through the interview of 5 purposively selected faculty as participants of the study using semi-structured interview guide questions. Transitioning seamlessly, the subsequent quantitative phase involved 31 participants across academic ranks, assessing faculty productivity, knowledge, and skills in these functions. Stringent validation processes, including expert validation of interview protocols and statistical reliability checks for survey instruments, underscored the research's methodological rigor. Despite faculty recognition of the value of R&E, engagement remained compliance-driven, revealing underlying challenges such as limited expertise and institutional expectations. Proposed interventions centered on mentoring, skill development, and creating a supportive environment. Proficiency gaps identified in statistical tools and international conference presentations suggested targeted training needs. The study underscored the importance of aligning faculty engagement with intrinsic motivation and institutional goals, paving the way for future investigations into motivational influences and the intricate dynamics of R&E practices in HEIs.

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1. INTRODUCTION

Higher education institutions (HEIs) play a vital role in advancing sustainable development through research, education, and community service [1], [2]. With the growing global focus on sustainability, HEIs are increasingly seen as key drivers of change across sectors [3], [4]. Universities are encouraged to engage in community activities aligned with the sustainable development goals (SDGs), thereby amplifying their societal impact [5]. In the Philippines, state universities and colleges (SUCs) are expected to focus their research on technological innovation, economic growth, and policy development, in line with the Commission on Higher Education (CHED) directives [6], [7]. This aligns with international expectations that position HEIs as central to achieving the SDGs and addressing global challenges [8], [9].

Faculty members play a crucial role in advancing HEIs and driving sustainable development through their academic work, innovation, and community involvement [10]–[12]. Their contributions not only elevate institutional reputation but also create meaningful societal impact. As research and development have become central to the mission of universities, faculty are expected to produce knowledge that supports sustainability, not merely meet output quotas [13]–[15].

However, low faculty engagement in research and extension (R&E) poses a significant challenge. While some faculty members are active, many remain disengaged. To understand and address this issue, the study applies the theory of planned behaviour (TPB), which examines how attitudes, perceived expectations, and confidence in institutional support influence R&E participation [16]–[19]. Identifying these factors is essential to developing strategies that strengthen faculty involvement and improve R&E outcomes. This study explores the issue of low faculty engagement in R&E, drawing from similar findings across Philippine HEIs [20], [21]. Although the value of R&E is widely recognized, faculty productivity is often hindered by challenges such as limited orientation, lack of personal commitment, workload demands, and inadequate institutional support [22]–[27]. Given that research is a key measure of academic and professional growth, addressing these barriers is essential [28], [29]. Focusing on one of the HEIs in Zamboanga del Sur, Philippines, this investigation aims to identify specific challenges and propose interventions to strengthen faculty R&E capabilities. The insights gained may serve as a framework for other HEIs to enhance faculty productivity and community engagement.

This study adopted a sequential-exploratory mixed method research design to investigate on the R&E function of faculty in HEI. Specifically, it sought answers to the questions:

- What are the views of the HEI faculty on R&E functions? (Qualitative)
- What is the participants' R&E engagement? (Qualitative and quantitative)
- What are the issues and challenges they encountered in performing R&E functions and their suggested interventions and possible solutions to increase R&E productivity? (Qualitative)
- What is the faculty members' proficiency level in the different R&E processes? (Quantitative)

2. METHOD

2.1. Research methodology

This study employed an exploratory sequential mixed-methods research, a methodological strategy that combines the collection and analysis of qualitative data initially, followed by the collection and analysis of quantitative data. As outlined, this research design provides a comprehensive framework that integrates qualitative and quantitative methods [30]. The qualitative phase occurs first, using interviews, focus groups, or content analysis to deeply explore the research problem. Insights from the qualitative data inform the creation of a structured survey or quantitative instrument for the next phase [31]. The quantitative phase, involving a larger sample size and statistical analysis, aims to test and generalize the qualitative findings. This integration of qualitative and quantitative data provides a comprehensive understanding of the research problem, enabling the exploration of complex phenomena, validation of qualitative results, and formulation of well-rounded recommendations for future actions [32]. In this study, the qualitative phase explored the perspectives of HEIs faculty members on their R&E functions, as well as the challenges they face in these roles. This phase also identified potential interventions and solutions to improve R&E productivity [33]. Building on the qualitative findings of the mixed methods research (MMR) study, a comprehensive survey was developed for the quantitative phase. This survey aimed to assess participants' productivity levels in R&E activities, as well as their perceived knowledge and skills in various processes related to these functions. Demographic information was also collected. The survey questions were informed by the key themes identified during the qualitative data analysis, providing a holistic view of faculty members' current productivity. This approach serves as a valuable reference for formulating targeted strategies to enhance R&E functions within HEIs.

2.2. Population and samples

The study involved faculty members from one of the HEIs in Zamboanga del Sur, Philippines as participants. In the qualitative phase, a sequential exploratory design was employed to explore faculty perspectives, experiences, and challenges related to R&E functions. Purposive sampling was used to select 5 faculty members holding plantilla positions with academic ranks from assistant professor to professor. This ensured diverse insights across different ranks and responsibilities. Selection criteria included having at least 5 years of service in higher education and a willingness to participate, as confirmed by signed informed consent. In the quantitative phase, simple random sampling was used to select 31 faculty members from various disciplines and ranks, including instructors to professors, all with a minimum of 5 years teaching experience. This sampling approach ensured a fair representation of eligible faculty members to assess their engagement in R&E activities.

2.3. Research instrument

An interview guide containing open-ended questions was developed to explore faculty views, experiences, and challenges related to R&E functions. The formulation of the interview guide was grounded in a thorough review of relevant literature. Prior to the actual data collection, the guide underwent refinement and validation by 2 researchers with expertise in qualitative studies. Based on their feedback, the researcher revised the guide and its accompanying protocols for conducting interviews. For the quantitative phase, data were gathered through survey forms specifically designed to capture key aspects of faculty engagement in R&E. The questionnaire had 3 parts: i) the demographic profile survey form, which collected information such as academic rank, length of service in HEIs, highest educational attainment, and academic discipline to provide context for interpreting engagement patterns; ii) the R&E engagement questionnaire, developed from the qualitative findings, which assessed faculty contributions and involvement in R&E initiatives by translating interview narratives into quantifiable items; and iii) the proficiency in R&E processes questionnaire, also based on qualitative insights, which evaluated participants' skills and competencies in performing various R&E processes. Together, these instruments ensured a comprehensive and contextually grounded assessment of faculty engagement.

2.4. Validation of the instruments

The questionnaires and research instruments in this study underwent rigorous development and validation to ensure the collection of objective and reliable data. For the qualitative phase, the interview guide and study protocols were reviewed and validated by 2 experts in qualitative research, and their recommendations were incorporated into the final version. In the quantitative phase, construct reliability was emphasized to ensure internal consistency. The R&E engagement questionnaire and the knowledge and skills in R&E processes questionnaire were pilot-tested with at least ten faculty members not included in the main study. The responses were analyzed using Cronbach's alpha, a standard measure of internal consistency. Items with alpha values of 0.70 or higher were retained, while those below 0.60 were excluded [34]. The resulting reliability coefficients were: research engagement questionnaire (0.878), extension engagement questionnaire (0.946), capability in research processes questionnaire (0.99), and capability in extension processes questionnaire (0.99). After meeting the required psychometric standards, the finalized instruments were used for the main data collection, ensuring both reliability and validity [35].

2.5. Collection of data

The data collection process for this study involved 2 phases to gain a comprehensive understanding of faculty involvement in R&E functions. The first phase consisted of one-on-one in-depth interviews (IDI), which explored faculty experiences, perspectives, and challenges, providing rich, contextual insights. In the second phase, quantitative data were collected from 31 faculty members using the R&E engagement questionnaire and the proficiency in R&E processes questionnaire. These tools captured measurable data on engagement, productivity, and proficiency. To ensure convenience and efficiency, the surveys were administered online via Google Forms, allowing secure and streamlined submission of responses in a digital format.

2.6. Analysis of data

In analyzing the IDI transcripts, the study adhered to the systematic approach outlined by Braun and Clarke [36], building upon their well-established coding framework for thematic analysis. The various phases of thematic analysis was employed in this research: thematic analysis was employed to analyze qualitative data, following these phases: i) data familiarization-transcribing, reading, and noting initial ideas; ii) generating initial codes-identifying key features and coding them systematically across the dataset; iii) searching for themes-grouping related codes into potential themes; iv) reviewing themes-refining themes for coherence and relevance, including creating a thematic map; and v) producing the report-selecting compelling excerpts, linking findings to research questions and literature, and presenting them as thematic narratives and visual representations. For the quantitative data, the following statistical tools were used: counts and percentages to describe participant profiles and productivity; weighted mean to assess levels of engagement and proficiency in R&E; and a 5-point Likert scale to interpret results, ranging from very low to very high for both engagement and proficiency in R&E processes.

3. RESULTS AND DISCUSSION

3.1. Study demographics

For the first phase, the study participants' demographics. Most of the participants were assistant professors with at least ten years of experience at the college. The 4 were pursuing doctoral degrees, while one had already earned a PhD and was engaged in postdoctoral studies.

In the quantitative phase, the age distribution was led by those aged 31-40 years (48.39%), followed by 41-50 years (19.35%). Gender distribution was relatively balanced, with 54.84% female and 45.16% male. Most participants held the rank of assistant professor I (48.39%), followed by instructors (35.48%) and associate professors I (16.13%). In terms of service length, 41.94% had 4-10 years of experience, while 32.26% and 25.81% had 10-20 years and over 21 years, respectively. Educational attainment showed a mix of master's degree holders and those with doctoral units, while 19.35% had completed a doctorate. Academic disciplines were diverse, with information and communication technology (ICT) having the highest representation (19.35%), followed by general education, natural sciences, and social sciences. Regarding research, 35.48% had undertaken 0-1 projects, and 64.52% had published 0-1 papers. Most participants were involved in extension activities as participants (83.87%), with only 16.13% serving as project leaders.

In the first phase of the study, a semi-structured interview guide served as the basis for operationalizing the study instrument and eliciting key findings. Since this was the case, the resulting data was parsed into distinct categories during the analysis. This investigation has uncovered 4 primary themes that are reflective of the research topics, namely: opinion on R&E functions in HEIs, engagement on R&E, issues and challenges on R&E functions, intervention and possible solution on R&E productivity. To ensure confidentiality, participants are assigned codes (P1, P2, P3, P4, and P5) that are quoted in the interview transcripts.

3.2. Views of the HEI faculty on R&E functions

This theme reflects how the participants perceived their obligations regarding research and education as part of their roles as faculty members' in HEIs. The participants look at their role as researchers and extensionist to be catalyst for professional and societal growth and development through knowledge generation.

3.2.1. Catalyst for professional and societal growth and development through knowledge generation

As member of faculty in HEIs, one participant said that professors are expected to conduct research to create new knowledge for the benefit of the community. She highlighted that:

"The faculty are expected to generate new ideas/outputs that could be used by the community through extension activities also." (P3)

Our understanding of the world around us can be expanded by research-generated knowledge, which can provide us new perspectives. P2 shared:

"I believe that faculty in higher education institutions must be engaged in knowledge creation and generation. We create knowledge through research as it allows us to critically question the dynamics of various constructs in our chosen field and share results of the same to the community through extension." (P2)

Nonetheless, R&E should both be continuing activities because they both start and end with a problem, which shapes their significance in transforming the communities around them:

"Having it part of the function of the HEI is about shaping the strategic role of higher institution to the community as a reservoir of knowledge. Research is important for the generation of knowledge while extension serves as the application of the underlying knowledge." (P4)

In addition,

"R&E has a great impact to the members of the faculty in HEI, it does not only provide professional enhancement and career development however, it helps improve their capabilities and ability in exploring things more beneficial and impact to the needs of the society." (P1)

Institutions of higher education (HEIs) have a social responsibility to assist their local communities in raising their citizens' living standards by implementing sustainable programs out from the knowledge generated:

"R&E functions in HEIs is intended to improve the quality of instruction and the life of the community where the HEIs is located. Its primary purpose of knowledge generation for the benefit of the community." (P5)

3.3. Participants' R&E engagement

During the course of the interview, one description came to the surface in relation to the faculty

members' involvement in R&E activities as part of their roles, faculty are engaged in R&E as compliance of what is required.

3.3.1. Faculty are engaged in R&E as compliance of what is required

Participants' statements regarding their involvement in R&E demonstrate that faculty members' carry out these extra responsibilities as part of their effort to meet institutional expectations. The faculty were aware of the benefit of doing R&E:

"That engagement into R&E has a bigger chance of improving abilities, such as, writing, reasoning and critical thinking." (P1)

However, the results of the interview prove that participants consider their participation in R&E simply as a means of ensuring that they meet the prerequisites for program or degree as faculty.

"I am poorly engaged in R&E. I only do research as part of course requirements and extension as part of the activity in our program/department." (P4)

P2 and P3 have both said explicitly that they feel their ability to contribute to the research is severely constrained due to time restrictions and other obligations. Additionally, the proposal submission was the only point of engagement. They revealed:

"I admit that I have been not so engaged in R&E. However, I have few project engagements in my department, both R&E. I am one of the faculty who spearheaded the conduct of extension program in our department. I also presented few research proposals during the institutional in-house review." (P2)

"I only actively engaged in being an adviser for the research of the undergrad students. However, I have a very limited time to engage into the formulation of my own research." (P3)

Lastly, in the first stage of R&E engagement with P5, it is only done to make sure the program/degree is accredited. As he shared:

"I was engaged in R&E for the reason of complying the accreditation of our program but, after that I develop a habit of doing R&E projects as part of my work." (P5)

The quantitative results in Table 1 show high faculty engagement in both R&E, with extension scoring higher (mean=4.19) than research (mean=3.69). faculty actively collaborate on research (mean=4.26), publish in journals (mean=4.16), and contribute to community projects (mean=4.52). They strongly value extension works for community development (mean=4.58). However, qualitative findings reveal that many faculty members participate mainly to fulfill institutional or accreditation requirements rather than from personal motivation. Time constraints and workload were cited as barriers to deeper involvement. This contrast between high engagement scores and compliance-driven motivation highlights the need to foster more intrinsic interest in R&E work.

Table 1. R&E engagement

Statement	Mean	SD	I
Research engagement			
1. I have published research papers in peer-reviewed journals or conferences.	4.16	1.036	HE
2. My research projects have received external funding.	2.74	1.341	ME
3. I have actively contributed to the development of my field of expertise through research.	3.90	1.012	HE
4. I collaborate with colleagues and students on research projects.	4.26	0.999	VHE
5. I regularly present my research findings at conferences or seminars.	3.39	1.145	ME
Overall mean	3.69		HE
Extension engagement			
1. I actively engage in extension activities that benefit the community.	4.52	0.811	VHE
2. I participate in community outreach programs and development projects.	4.29	0.902	VHE
3. I collaborate with external organizations to extend my expertise to the community.	3.90	1.012	HE
4. I believe that extension activities are essential for community development.	4.58	0.886	VHE
5. I actively contribute to workshops, seminars, or conferences related to extension activities.	3.97	1.08	HE
6. I receive support from my institution for my extension activities.	4.13	0.991	HE
7. I am satisfied with my current level of participation in extension activities.	3.97	1.14	HE
Overall mean	4.19		HE

Legend: 4.21-5.00=very high engagement (VHE); 3.41-4.20=high engagement (HE); 2.61-3.40=moderate engagement (ME); 1.81-2.60=low engagement (LE); and 1.00-1.80=very low engagement (VLE).

Faculty perspectives on research and extension in higher education: ... (Haidee Fuentes Patalinghug)

3.4. Challenges encountered in performing R&E functions, suggested interventions and possible solutions to increase R&E productivity

3.4.1. Issues and challenges on R&E functions

The 4 recurring themes emerged from the interview data, and they are as follows: limited expertise among the faculty for knowledge transfer; institutional climate practices on faculty development; overwork with academic functions; and beginners are setting too high expectation about research.

a. Limited expertise among the faculty for knowledge transfer

One of the issues that can be attributed to a lower rate of research and development production is faculty that suffers from a deficit in both knowledge and experience in R&E. Participants' assertions that they did not engage in R&E because of this knowledge gap were reflected in the interviews. In particular,

"Majority of the faculty wanted to engage into doing R&E but having difficulty to start a project due to lack or limited knowledge on particular activity such as proposing projects, research writing and publication." (P5)

Other than this, however, the production of R&E output required specialized talents innate to individual, as P4 shared:

"Functions also require critical thinking and technical know-how, adding up to our burden as faculty." (P4)

P1 and P2 believe there are not enough R&E opportunities available for them to advance their skills; as a result, they are slipping further and further behind as the field advances. They said:

"I only have limited contribution in terms of R&E; my undergrad doesn't give me much opportunity to showcase my ability since there are more qualified and fit to handle certain engagement." (P1)

"What I have seen as the problem I met in research is that, right now, I don't have adequate knowledge and trainings on this. Considering the trend of research nowadays, I admit that I am really behind the track." (P2)

In P5's final statement, he elaborated on his perspective about the additional functions in R&E based on personal experiences and actual scenarios:

"I have seen that one of the challenges which myself and colleagues are facing in R&E is the lack of opportunity available to develop our skills. But there are still personal factors to consider." (P5)

b. Institutional climate, support and practices on faculty development and motivation

This absence of support pertains to monetary support, work support, and training support. Based on what was said in the interview by the participants, the internal policies, procedures and practices of the institution could be one of the reasons why faculty members' have such a difficult time making progress in R&E. P1 and P2 shared:

"I need to push myself into advising undergrad researches, and personally conduct my own even without the help of the school in such a way they might recognize me and have their attention that I do exist and can even do more in terms of these areas like R&E." (P1)

"Aside from the lack of time, sometimes I felt discouraged because of the practices and budget allocation." (P2)

P3, P4, and P5 emphasized that a lack of institutional support and guidance was a major factor making it difficult for professors to become effective in R&E. Also,

"One is needed to engage in research but because of overlapping duties and responsibilities in teaching, faculty unable to do so." (P4).

Aside from this, participants noted that their supervisor and school authorities had an important role in facilitating research engagements. When asked, their remarked as follows:

“Lack of guidance on the publication process was a challenge I encountered in performing the research function. Aside from this, supportive environment for faculty can be good motivation for productivity in R&E.” (P3)

“Lack of motivation hindered me in performing both the R&E functions.” (P3)

“The productivity of the faculty in terms of R&E is also dependent on the leadership of particular department and Institution. For instance, if the supervisors are not gearing towards developing the faculty to become productive, still it is difficult to establish a culture of research among them.” (P5)

c. Overwork with academic functions

Participants identified this as a significant barrier to participation because of time constraints imposed by other responsibilities. A participant's hefty teaching load was also cited as an impediment to their participation in R&E. It was a common theme among the participants that their workload sometimes gets in the way of their engagement.

“R&E are sometimes neglected by some faculty because they are bombarded with works related to instruction.” (P2)

They shared:

“I also consider these functions additional burden, perhaps because of my poor research culture, as most of our time in HEI is primarily devoted to instruction, our main core function.” (P3)

“I have a very limited time to engage into the formulation of my own research due to teaching load and other duties and responsibilities at school, that is why I have a weak personal engagement to R&E due to time constraints. We do not have the luxury of time to give our attention in R&E.” (P4)

“In terms of research productivity, the faculty have to perform academic functions and paper works, thus resulting into lesser time devoted for R&E endeavors.” (P5)

Beginners are setting too high expectation about R&E productivity. Participants' tendency to focus on the grand picture rather than the granular details of each goal presented another difficulty in R&E. For instance, they have planned out how to make an impactful R&E even before the first steps have been taken. As they shared:

“The most important is that I will consider the relevance and impact of my research to the community before undergoing the process of making the research.” (P4)

“Meanwhile, choosing an impactful, research-based and program-aligned extension program challenged me in doing extension.” (P3)

“When I am still beginning to write R&E projects, I was really giving hard time for myself and see it a difficult endeavor because I am looking already on the impactful result without having the complete details. As I navigate in writing and exploring research in the later part, I found that I am too hard on myself at the beginning, which I believe should not be.” (P5)

3.4.2. Intervention and possible solution on R&E productivity

Data from interviews revealed 4 primary concepts about the intervention and possible solutions to the issues with faculty productivity and participation in R&E namely: collaboration, mentoring and sharing of expertise; provision of resources and administrative supports; time management practices; and updating of knowledge through professional development.

a. Collaboration, mentoring and sharing of expertise

Participants grasped the importance of collaborating on R&E projects with seasoned professionals and seasoned mentors. As shared,

“Mentoring to a new faculty researcher is a great help. Mentoring is a great manner of improving the research skills of the faculty.” (P4)

This could contribute to the productivity in R&E and elevate the levelling of institution in the accreditation.

“One of the aspects that the faculty needed to develop and hone their skills is to engage with other researchers.” (P5)

In this way, they can learn insight on how to do research specially the techniques and methodology to become productive in R&E. It is anticipated that teachers will be able to gain important insights through collaboration, which will allow them to be more productive in R&E.

“To collaborate with other faculty in doing R&E projects. In doing so, I can learn from them and thus improving my knowledge on these fields.” (P2)

“To establish a culture of research academic community wherein everyone is supportive and open-minded in the conduct of research. Mentoring and collaboration is one way that can boost the output in R&E.” (P5)

“I need somebody who can build me up in pursuing my field of interest. Somebody who can mentor me in the actual and real scenarios of research, furthermore, financial also is very important and most importantly the support of family and heavenly father.” (P1)

In addition, P1's point of view weighed in with the following:

“I am expecting to be given the chance to attend conferences related to research and maybe to be mentored by somebody in the department/institution who knowledgeable on the field.” (P2)

“The most important support needed and there is a necessity to be implemented is that collaborative research is a strategy than can be applied. Collaboration among colleagues is a great support in order to encourage and increase faculty research.” (P4)

b. Provision of resources and administrative supports

The institution plays a vital role in the establishment of a conducive atmosphere for faculty members to participate in and finish research and development initiatives. There are many different manifestations that this institutional assistance can take. P3 have shared that:

“Think more capacity-building on crafting impactful, research-based extension programs will boost my extension engagement.” (P3)

In addition, institutional assistance should come in the form of release time from the faculty's academic load so that they have more time to devote to R&E participation, as the P4 and P2 report suggests:

“Also, the administration shall include adding units for the research task of the faculty.” (P4)

“The admin might consider giving release time to those faculty doing research/extension projects so that they will be motivated to engage in such endeavours.” (P2)

Aside from this,

“Financial also is very important.” (P1)

To become productive in R&E endeavor. Supportive environment can be very beneficial among faculty researchers and extensionist as P5 shared:

“In my experience, it helped me a lot in my journey when I was given the support and opportunity to capacitate myself with skills needed to conduct R&E projects.” (P5)

c. Time management practices

The practice of efficient time management has a number of benefits, some of which include an increase in productivity, a reduction in levels of stress, and an increased ability to focus on what truly matters. This came to light over the course of the conversation with the participants. They acknowledge that effective time management is one of the interventions that must be used to ensure that R&E participation will lead to increased productivity. As shared:

“For the faculty to become productive, it is important for them to improve their time management as it is one important aspect to become productive in R&E since we are already loaded with the academic functions.” (P5)

“I plan to improve my R&E engagement by devoting time for these activities and working out my personal R&E plans.” (P2)

“Also, time is really a factor for me, because of the workload that I must perform on the instruction, I do not have time to do R&E activities anymore.” (P1)

Updating of knowledge through professional development. Nonetheless, faculty members' abilities to produce R&E results depends heavily on their familiarity with the fundamentals of intervention and potential solutions to improve R&E productivity. In critical lenses, the pursuit of educational upgrading and the acquisition of information are vital topics to consider; hence, faculty have considered this as essential for them to become productive in R&E by sharing:

"To capacitate myself, I am planning to pursue higher educational degree (doctorate degree) to kept abreast on the current trends in education specially on research." (P2)

"I will expose myself more to various seminars about research." (P4)

"To become productive in research it is important to update the knowledge and skills by attending seminars and conferences wherein you can learn many things that you can not get in studying alone in graduate school. It is also very significant to continue learning through pursuing graduate studies." (P5)

3.5. Faculty members' level of capability in the different R&E processes

3.5.1. Research capability

The results on research capability in Table 2 reveal a generally high proficient level among the participants, with an overall mean of 3.50, categorizing their proficiency as high proficiency (HP). The participants demonstrate competency across various aspects of the research process, encompassing understanding the nature of educational research, navigating the language of research, and executing fundamental tasks such as formulating research questions and setting study parameters. Several notable strengths are evident, particularly in areas related to writing and structuring research components. Notably, participants express confidence in their proficiency to create introductions to articles and look for literature and studies (mean=3.74); paraphrase and summarize (mean=3.77) and produce reviews of related literature (mean=3.68). Moreover, they demonstrate familiarity with ethical considerations in research (mean=3.65) and show competence in making conclusions (mean=3.65). However, certain areas exhibit a lower level of proficiency, with participants rating themselves moderately proficient (MP). These include using statistical tools (mean=3.32), validating instruments (mean=3.32), scrutinizing journals (mean=3.23), and presenting papers at international conferences (mean=3.19). These aspects suggest potential areas for improvement and targeted training to enhance participants' research capabilities.

Table 2. Research capability

Research capability	Mean	SD	I
1. I know well the nature of educational research.	3.29	0.973	MP
2. I can understand the language of research.	3.45	0.888	HP
3. I know how to make a research title.	3.61	0.989	HP
4. I know how to write an introduction to an article.	3.74	0.93	HP
5. I know how to look for Literature and Studies.	3.74	0.999	HP
6. I know how to write a review of related literature.	3.68	0.979	HP
7. I know how to formulate research question(s).	3.68	0.909	HP
8. I know how to set the parameters of the study.	3.52	1.029	HP
9. I know how to make conceptual and theoretical frameworks.	3.52	0.962	HP
10. I can decide on an appropriate research design.	3.52	1.122	HP
11. I know the kind of sampling technique I need to utilize.	3.32	0.909	MP
12. I know what is population and sample.	3.58	1.025	HP
13. I can identify a particular statistical tool to be used in my study.	3.32	1.045	MP
14. I know how to validate an instrument.	3.32	1.045	MP
15. I know how to sustain trustworthiness of the data gathered.	3.55	0.888	HP
16. I know how to conduct interviews.	3.61	1.022	HP
17. I know what the ethical considerations in conducting research are.	3.65	1.018	HP
18. I know how to analyze results.	3.48	1.092	HP
19. I know how to read tables and other graphical representations.	3.55	1.028	HP
20. I know how to use software in analyzing the data.	3.23	1.23	MP
21. I know how to corroborate the results.	3.23	1.175	MP
22. I know how to make conclusions.	3.65	0.95	HP
23. I know how to do in-text citation.	3.71	1.189	HP
24. I know how to paraphrase and summarize.	3.77	1.087	HP
25. I know how to use APA 7th Edition in doing citations.	3.65	1.199	HP
26. I know how to make my paper publishable.	3.45	1.121	HP
27. I know how to scrutinize journals.	3.23	1.383	MP
28. I know how to present my paper at international conferences.	3.19	1.167	MP
29. I am good at making the abstract of the study.	3.16	1.241	MP
Overall mean	3.50		HP

Legend: 4.21-5.00=very high proficiency (VHP); 3.41-4.20=high proficiency (HP); 2.61-3.40=moderate proficiency (MP); 1.81-2.60=low proficiency (LP); and 1.00-1.80=very low proficiency (VLP).

These results highlight both the strengths and development needs of faculty researchers. While there is a strong grasp of fundamental research processes and academic writing, there are skill gaps in advanced tasks such as data analysis, instrument validation, and international dissemination. The self-assessed MP ratings in these areas reflect a clear opportunity for institutional support through training, mentorship, and professional development programs to enhance overall research capability.

3.5.2. Community extension capability

As to the level of capability in community extension, data in Table 3 reveal a MP level among participants, as indicated by the overall mean of 3.41, categorized as HP. This suggests a solid foundation in community extension activities with areas of strength and others requiring further development. The strengths are evident in participants' understanding of the objectives and principles of extension work (mean=3.68) and their ability to identify the needs and concerns of the target community (mean=3.55). Additionally, participants express proficiency in areas such as developing effective extension programs (mean=3.42), engaging with stakeholders (mean=3.45), and understanding the ethical considerations and cultural sensitivity required in extension work (mean=3.52). However, there are areas identified as MP that indicate potential areas for improvement. Notably, participants rated themselves MP in skills related to organizing and facilitating workshops, seminars, and training sessions (mean=3.26), grant writing and securing funding for extension projects (mean=3.00), developing and using appropriate evaluation instruments for extension program assessment (mean=3.16), and preparing comprehensive reports and presentations on extension outcomes (mean=3.29). These results suggest opportunities for targeted capacity-building initiatives, training, or professional development programs to enhance specific aspects of community extension capability. For instance, focusing on improving skills related to workshop organization, grant writing, and evaluation instrument development could contribute to an overall increase in proficiency levels. These areas can serve as a foundation for tailored interventions that address specific needs and foster continuous improvement in community extension capabilities.

Table 3. Community extension capability

Research capability	Mean	SD	I
1. I understand the objectives and principles of extension work.	3.68	0.832	HP
2. I can develop effective extension programs.	3.42	1.057	HP
3. I know how to identify the needs and concerns of the target community.	3.55	0.961	HP
4. I can engage with stakeholders in the community to support extension initiatives.	3.45	0.995	HP
5. I am skilled at organizing and facilitating workshops, seminars, and training sessions.	3.26	1.094	MP
6. I can effectively communicate and disseminate information to diverse audiences.	3.42	0.958	HP
7. I understand the ethical considerations and cultural sensitivity required in extension work.	3.52	0.996	HP
8. I know how to evaluate the impact and effectiveness of extension programs.	3.48	0.926	HP
9. I can adapt extension activities to different community contexts.	3.45	0.961	HP
10. I am good in grant writing and securing funding for extension projects.	3.00	1.155	MP
11. I can develop and use appropriate evaluation instruments for extension program assessment.	3.16	1.186	MP
12. I know how to engage in participatory and collaborative extension activities.	3.32	1.045	MP
13. I can prepare comprehensive reports and presentations on extension outcomes.	3.29	1.101	MP
14. I understand the importance of building long-term relationships with community partners.	3.48	0.89	HP
15. I can apply effective communication strategies to mobilize community support.	3.42	0.923	HP
16. I know how to integrate research findings into extension activities for evidence-based outreach.	3.39	0.989	MP
17. I can effectively manage and lead extension teams and volunteers.	3.29	1.101	MP
18. I understand the importance of sustainability and impact assessment in extension work.	3.55	0.925	HP
19. I can adapt extension methods to address emerging community needs.	3.42	0.958	HP
20. I know how to use technology and digital tools for extension and outreach efforts.	3.58	1.057	HP
Overall mean	3.41		HP

Legend: 4.21-5.00=very high proficiency (VHP); 3.41-4.20=high proficiency (HP); 2.61-3.40=moderate proficiency (MP); 1.81-2.60=low proficiency (LP); and 1.00-1.80=very low proficiency (VLP).

3.6. Discussion

This study examined the role of faculty in HEIs, focusing on their engagement, challenges, and contributions to R&E productivity. Findings highlight the critical role of R&E in generating new knowledge and promoting sustainable development. Faculty members are central to this process, serving as catalysts for professional and societal advancement through active involvement in research and innovation. Their engagement is essential to ensuring educational quality and institutional growth [37]. This aligns with the views of Ulla *et al.* [10] and Wa-Mbaleka and Gomez [38], who assert that faculty should be creators of impactful ideas, innovators of practice, and forward-thinking contributors to societal progress [15], [23]. Their participation in R&E is indispensable to nation-building, as it elevates both academic institutions and

the communities they serve.

While faculty members in HEIs generally acknowledge the significance of R&E in their roles, actual participation remains limited. The study reveals a nuanced interplay between quantitative and qualitative data-despite high self-reported engagement in R&E activities; deeper analysis shows that this engagement is often driven by compliance with institutional requirements rather than genuine interest or intrinsic motivation [39]. This disconnect between understanding and execution underscores the need for further exploration and strategic interventions. Research and development have become central to defining the identity and mission of universities [13], yet faculty involvement is frequently confined to fulfilling mandates such as course requirements and accreditation standards. Consistent with previous findings [39], the lack of personal motivation emerges as a critical barrier, highlighting the essential role of individual commitment in achieving meaningful R&E outcomes [40], [41]. Moreover, a clear disparity persists between the prioritization of teaching and R&E, with many faculty members focusing primarily on instructional duties. This observation aligns with studies noting institutional tendencies to emphasize teaching over research engagement [10], [15]. Addressing this imbalance requires fostering a more supportive academic environment-one that encourages faculty to invest equally in both teaching and R&E functions as complementary pillars of higher education excellence.

Faculty members in HEIs often face multiple challenges in fulfilling their R&E functions. This study, consistent with previous findings [10], [15], [42]–[44], reveals that limited expertise-especially among those without doctoral qualifications-hampers faculty capability in conducting R&E activities. Skills such as proposal writing, research design, and articulating study significance remain underdeveloped for many [10], [45]. Additionally, institutional factors such as inadequate support, funding, and lack of structured faculty development programs contribute to low engagement [39], [46], [47]. The academic workload further strains faculty capacity, with most time allocated to teaching, leaving little room for R&E [48], [49], echoing the findings of Ulla *et al.* [50]. This indicates that while no institution is without flaws, addressing these systemic issues is crucial to improving R&E outcomes [39]. Another key challenge identified is the pressure of unrealistic expectations, particularly among early-career faculty. Many set overly ambitious R&E goals, which may lead to frustration and disengagement. As noted in earlier studies [22], breaking goals into manageable tasks and focusing on achievable outcomes is vital for long-term success. To address these issues, this study recommends promoting collaboration, mentoring, and sharing of expertise-strategies shown to enhance academic productivity [51]–[54]. Collaborative efforts not only reduce individual workload but also foster co-creation of knowledge. Additionally, providing resources, reducing teaching loads, and strengthening administrative support can significantly improve faculty productivity in R&E [55], [56]. Mentoring, especially for newly hired faculty, is essential in building confidence and competence in R&E work. In addition, financial support is crucial in the success in R&E engagement [57]. Similar result found that mentoring and logistical support can help boost productivity in research [58]–[61]. Third, faculty identified that time management could also be part of their intervention in dealing with their R&E productivity and engagement. In doing R&E, the faculty should strive to achieve balance so that they can carry out their work in a manner that is both more effective and more efficient. Lastly, in this study, the faculty have identified updating of knowledge through professional development can help their R&E engagement and capability [62]. This study emphasizes the significance of acquired knowledge in enhancing faculty skills and providing them with the understanding necessary for successful R&E initiatives [63]. Furthermore, these findings reinforce previous research that indicates the importance of training, seminars, and conferences in equipping faculty with the knowledge and confidence to conduct their own research projects and extension activities.

Based on the findings, faculty members show a certain level of proficiency in research and community extension processes, particularly in formulating research questions, understanding research terminology, and addressing ethical considerations. While they exhibited moderate knowledge and skills across various research processes, they were notably adept at identifying research areas, reviewing literature, and discussing research findings. However, there were identified gaps, particularly in their ability to write publishable research papers [64]. There is a clear need for faculty members to receive training in research methods and statistics. Additionally, several areas have been identified that indicate potential for improvement in community extension. These include organizing and facilitating workshops, seminars, and training sessions; grant writing and securing funding for extension projects; developing and utilizing appropriate evaluation tools for assessing extension programs; and preparing comprehensive reports and presentations on extension outcomes [65].

4. CONCLUSION

While faculty members in HEIs acknowledge the critical role of R&E as integral to their professional responsibilities and as a means to enhance community well-being, their actual engagement often falls short of expectations. This study reveals a significant disconnect between the recognized importance of R&E and the levels of active participation observed, indicating that faculty motivation is primarily driven by compliance requirements rather than a genuine passion for their work. This disparity is rooted in several identified challenges, including limited expertise, overwhelming workloads, heightened expectations, and a lack of a supportive environment. Despite faculty members perceiving themselves as proficient in fundamental research writing and structure, as well as in understanding extension objectives and principles, they exhibit notable deficiencies in critical areas such as statistics, international presentation skills, and grant writing. This situation underscores the urgent need for targeted interventions to enhance their capabilities. Implementing focused capacity-building initiatives in grant writing and workshop organization could significantly bolster faculty proficiency. The key to enhancing R&E productivity lies in aligning faculty engagement with authentic interest and institutional objectives. Targeted interventions, mentoring, and skill development initiatives can effectively address specific challenges and foster intrinsic motivation among faculty members. Moreover, creating a supportive environment and emphasizing continuous learning are vital components for cultivating a thriving R&E culture within HEIs. This study provides important insights into the current levels of R&E engagement among faculty; however, its limitations, including reliance on non-representative samples, highlight the necessity for additional research. Future investigations should explore the complex relationships between motivation, time management, and R&E productivity, while also examining broader R&E practices and external factors. Such research could significantly enhance the effectiveness of faculty researchers and extension workers, thereby improving the impact of HEIs on their communities and advancing progress in education and research. By addressing these challenges and fostering a culture of engagement and support, HEIs can empower faculty members to fully realize their potential in R&E, ultimately leading to more meaningful contributions to their communities and the academic landscape.

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AUTHOR CONTRIBUTIONS STATEMENT

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C : **C**onceptualization

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E : Writing - Review & **E**ding

Vi : **V**isualization

Su : **S**upervision

P : **P**roject administration

Fu : **F**unding acquisition

CONFLICT OF INTEREST STATEMENT

The authors declare that there are no conflicts of interest or competing interests related to the conduct and publication of this research.

INFORMED CONSENT

Informed consent was obtained from all individuals who participated in this study. Prior to their involvement, participants were fully informed about the purpose, procedures, potential risks, and benefits of the research. Participation was voluntary, and written consent was secured to ensure the protection of their rights and privacy.

ETHICAL APPROVAL

The research involving human participants complied with all relevant national regulations and institutional policies in accordance with the tenets of the Helsinki Declaration. Approval was obtained from the Institutional Research Committee of J.H. Cerilles State College. Additionally, the conduct of the study was formally approved by the Office of the Vice President for Research and Extension at J.H. Cerilles State College.

DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author, [HFP], upon reasonable request. Due to privacy and ethical considerations, the data are not publicly available.

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